American Gilsonite Company
A Subsidiary of Chevron Resources Company
Bonanza, Utah 84008 • Phone (801) 789-1921

Bonanza Mining Operations

September 15, 1982

Mr. Thomas N. Tetting, Engineering Geologist
State of Utah, Natural Resources & Energy
Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

Dear Mr. Thomas:

In response to a letter of December 17, 1981, from Mr. James Smith, Jr. and additional follow-up questions by yourself, on June 14, 1982, the following is submitted.

1) With regard to question #1, concerning NPDES permits for water discharge, attached (#1A) is a copy of the NPDES permit application submitted to:

Mr. Roger E. Frenette, Chief
Water and Hazardous Waste Enforcement Branch
United States Environmental Protection Agency
Denver, Colorado

At this time, the original permit, #0000167, expired on June 30, 1981. A letter allowing continued discharge until the new permit application is processed is also attached (#1B).

As to Air Quality, attached (#1C) is a copy of American Gilsonite's 1981 Emission Inventory as submitted to the Utah Air Conservation Committee. Also attached, (#1D),is an approval to operate in accordance with the 1981 inventory.

2) Enclosed is a map of the Bonanza area which indicates the location of discharge outfalls as specified in the NPDES permits. It should be noted that currently E-31, LE-4, LE-3, and B-37 have no discharge. B-37 is being pumped by Ziegler Chemical and Mineral Corp. under their own permits. Ponding,

where used, is also indicated on this map. The ore storage ponds shown on the map are remaining from the old hydraulic mining system and currently contain no water. No diversions are currently being used.

In the mining of gilsonite, waste piles are virtually non-existent. Rock sorted from the ore in the Processing Plant is collected and dumped into the open cuts. Rock removed in shaft sinking is usually disposed of in a similar manner. Where an open cut is not close enough to a shaft to make this technique feasible, the rock is dumped to the side of the location and regraded at the time of reclamation. Top soil stockpiles are small where they exist at all, and thus not a separate structure which can be plotted onto a map.

3) No water is discharged from the Wagonhound vein at this time. This vein is quite shallow and future discharge is not anticipated.

With regard to your question on water discharge, I believe this has been covered in the answer to question 1. Currently, the only parameter not within the EPA specified limits is pH on the E-15 and E-30 outfalls. This problem is being worked on as various measures to reduce the pH are investigated. With regard to salt content, our latest correspondence with the EPA on this subject is also enclosed (#3A).

The map submitted for question #2 should cover the subject of drainage direction from the various outfalls. The receiving stream for all water discharged in this area is, by grade, the White River. These water discharges must traverse twenty miles of desert wash to reach the White River, and is absorbed into the ground prior to reaching the receiving stream. In mine site preparation, the topographic features are not altered significantly to effect drainage, and water discharge is not of a high enough flow rate to effect erosion.

4) Grades around our mine sites and access roads are, by necessity, kept to a minimum. Mine site locations are selected to accomplish this, as are road locations. A difficult location, where set up on a hillside or steep grade is required, is prepared by cutting a level location for the hoist house and other level pads for the collar, compressor, and timber yard. These pads are usually at different elevations with the slope between them kept as close to the original

topography as possible. In any case, a slope of no more than 1 : 1 is maintained in soil, and steeper where rock is present. Due to the minimal soil cover on steep slopes in this region, sediment control is not a problem at these locations.

Where mine sites are located on gentle slopes, grades are not a problem to maintain sediment control.

5) In preparing the application for the Bonanza Federal Lease, the term 2° dip on the gilsonite vein should have been 88° dip southwest to conform with the accepted geologic definition of dip.

8) Soil conditions within the Uintah basin vary depending upon the location of a particular mine site. Those situated on the tops or sides of hills or ridges tend to have a minimal soil cover. Sites located in wash plains or valleys tend to have a substantial cover depth. To set up and mine gilsonite, it is not necessary to remove all of the soil, but some rearrangement is required to facilitate the installation of surface structures.

Where soil cover is deep, the site is prepared by removing vegetation and grading the location to provide a level site for the collar and hoist house. An area is cleared for the compressor and timber yard, and routes graded for haul roads. These roads must be of adequate grade and curvature for the haul trucks. In most cases, no stockpile is necessary because the change in contour is minimal to achieve the desired results. Soil removed to level one part of a site may be used to construct road berms, pond dikes, or regraded across the site. Ponds must be constructed in some areas when necessary to keep discharge water in compliance with EPA guide lines.

The mining structures placed on these sites are designed to mount on concrete bases constructed in the soil. The shaft collar is excavated in the soil and it's walls cast in concrete down to the rock layer on each side of and across the gilsonite vein.

Where the soil cover is minimal, vegetation is removed and specific sites for the collar, hoist house, and bin are cleared to the rock layer. Concrete is cast for the hoist house, derrick, and bin. In some cases, the derrick and bin are pinned to the rock directly with the use of rock bolts.

Soil removed for these structures is sometimes stockpiled in low rounded piles away from washes. No additional stabilization is currently utilized. Occasionaly, the soil is used for the construction of road berms or pond dikes where necessary.

9) Reclamation on lands distrubed by American Gilsonite generally consists of the following sequence: 1-Removal of surface structures. 2-Clean-up of surface debris (including capping of shafts). 3-Regrading and harrowing of the surface. 4-Revegetation by allowing the natural plants to grow in their own natural sequence.

In order to understand the sequence and time table of reclamation, the types of disturbances and factors effecting equipment usage must be defined. The types of disturbances include mine sites, access roads, right-of-ways, veins open to the surface, and exploration drill sites. Factors effecting equipment removal include mine development else where on the property, ore variations, sales, and Federal safety requirements.

To better understand this, an idealized sequence will be outlined. To begin, exploration of the vein is necessary. Two methods are used, angle diamond core drilling and vertical plug drilling. The angle holes require a road to be developed along the vein to permit access. This road is designed to be used throughout the mining life of the vein. The core sites are stepped off perpendicular to the sides of the vein by a distance equal to the depth of the desired intercept with the vein. This side access is usually gained by back blading a road or, where conditions permit, simply cross-country driving. The angle core site consists of a level pad for the drill rig, small mud pits adequate to handle cuttings for the length of the hole, and parking for various vehicles. Upon completion of the drilling, the holes are cement plugged, equipment removed, mud pits allowed to dry out, area regraded, and natural revegetation allowed to progress. Mud pits usually take from six months to one year to dry.

When necessary for continued ore production at a level to meet sales requirements, a mine is developed on a vein. The location of this mine is based on proximity to the closest active mine, ore reserves calculated from exploration drilling, topographic features along the vein, and old mining areas.

Once a site has been selected, vertical drilling is done near the vein to determine ore quality, depth of vein, ground water tables, and vein dip. If the above conditions are satisfactory, the site is developed into a mine. Development consists of the installation of surface facilities which include a derrick head frame, hoist house, compressor, timber yard, bin and air lift, electrical supply, and shaft collar. Once these are installed, mining is started.

The life of a mine depends upon the amount of ore in reserve, sales of that type of ore, problems encountered in mining, and number of other mines producing the same type of ore. Typically, the life of a mine is between three and ten years. As the quantity of ore from a mine begins to diminish, another mine further down the vein and adjacent to the first is installed.

When the mine described here is out of ore, some of the equipment is now available for use else where. The derrick and hoist must remain for use as a second escapeway from the adjacent mine. Other pieces of surface equipment, however, are available for use else where in the operation. This equipment is left on site until needed, which could be a matter of days, months, or years.

When all of the equipment is finally removed from a site, the collar is capped with a twelve inch thick reinforced concrete slab. The site is then graded and harrowed and natural revegetation allowed to progress.

The access road along the vein is usually required to access other mine sites and not reclaimed until the entire section of vein accessable by it complete and equipment removed.

In the case where the vein is mined to the surface, resulting in a long open cut, the current method of reclamation involves the design of a blasting sequence to close a surface bridge from 35 to 50 feet thick over the slot. The time to design and implement this closure can vary from several months to several years following abandonment depending upon width, pillar locations, availability of design personnel and drilling equipment. Until the slot is closed, the area is fenced.

The follwoing table lists all of the mining areas from May 1975 to the present by current status.

DEVELOPMENT	ACTIVE	EQUIPMENT REMOVAL	RECLAMATION	COMPLETE
	E-15			
	E-14			
	E-29			
	E-30			
E-31				
	I-9			
	I-10			
	I-24			
	I-16			
I-15				
		I-18		
B-44				
	B-42			
	B-38			
		B-40		
		B-37		
	WH-12			
		WH-11		
	LE-5			
		LE-4	LE-10	
			LE-9	
			LE-20	
			LE-19	
			LE-3	
	H-1			
	H-2			
	H-10		PW-3	
			PW-4	
				PW-1
				PW-2
			R-1	
			R-2	
			R-3	
			R-4	

10) Currently the BLM and USGS have agreed to American Gilsonite's plan of allowing revegetation to occur in a natural sequence, with the understanding that if positive results are not observed in a few years, a mixture of native seeds will be introduced. The mixture specified by the BLM is as follows (per acre):

1	lb.	SAGEBRUSH (BLACK)
1	lb.	RABBITBRUSH (RUBBER GREENSTEM)
2	lbs.	SHADSCALE
2	lbs.	WESTERN WHEATGRASS
1	lb.	INDIAN RICE GRASS
1	lb.	GRAMA GRASS

Rate of application - 8 lbs. per acre.

No study has been done for or by American Gilsonite to define the vegetative cover density for this area. There is a study recently completed by the Vernal BLM which covers in detail the soil and vegetative cover for this area. This report is yet unpublished, but when it is available, it will be the best reference for this data.

11) It is the policy of American Gilsonite to keep all open veins fenced and posted, and to periodically inspect these fences and repair as necessary. All active mine shafts are fenced, and abandoned shafts are either fenced or capped with a twelve inch thick reinforced concrete slab. It must be understood, that much of the older workings done in the early part of this century were not protected and that maps of these workings, shafts, etc. were not kept or have been lost. Thus, some hazards do exist.

All future mining which results in an open cut to the surface will be closed by blasting a surface pillar from the walls across the vein. Experience has shown that when designed properly, this technique results in a substantial structure and enables complete surface restoration.

The maps currently held by the Division of Oil, Gas, and Mining indicate all known open veins on Company property.

12) The question of what is an adequate surface pillar to be left when mining gilsonite cannot be stated as being just some arbitrary figure. The 30-35 foot pillar agreed upon on the Wagonhound Federal lease was based on two factors. First, a surface barrier pillar was desirable on this lease

for ease of reclamation. Secondly, as the barrier pillar becomes thicker, marketable ore is lost, which might make complete removal and blasting more economical. In the case of Wagonhound, the ore down to the thirty five foot horizon was not of an acceptable quality to be marketed, thus the thirty five foot figure.

The vein in the Wagonhound lease area is less than two feet wide on the surface. A pillar of ore having a height of just ten feet would provide much more shear resistance with the walls to dissipate surface loads into the walls. In a twelve foot thick vein, a twenty foot thick pillar is substantial enough for support provided the underside is A-braced and lagged. (The zone between I-10 and I-9 is an example.)

14) Scrap metal, old equipment, excess construction materials, and things of this type are stored in the Company storage yard located in the S½, SE¼, Sec. 23, T. 9S., R.24E.. Material in this yard is used as needed for other projects, or sold as scrap or salvage from time to time.

Trash, garbage, and non-value items are disposed of in the open cut in the E-21 area located in the SW¼, NW¼, Sec. 7, T. 9S., R. 24 E.. At this time, an application has been sent to the State Division of Health to approve this landfill.

15) The dike and drainage ditch depicted on the surface plan for the Bonanza Federal lease is quite small in size, but necessary. As can be seen by examining the topography on this map, the shaft site for B-50 is situated in this small wash. It is felt that to prevent damage to the mine site due to heavy rains, the diversion to the next wash over is required. The shaft site cannot be moved conveniently, as it would leave the spacing between mines unbalanced, and require more surface disturbance in another location. These sites have all been selected to achieve optimal spacing with the best possible site locations.

16) Since top soil is virtually non-existant in this area due to a combination of erosive geology and dry climate, the depth of respread is irrelevent. The material which is considered soil, that being anything not solid rock, varies in depth from a few inches to twelve feet at one of our mine sites. This soil is capable of supporting the local

plant community particularly well, provided a natural sequence of regrowth is allowed to occur. Surface preparation to allow this regrowth depends mostly on the degree of compaction a site has received. Sites used for exploration drilling have been subjected to little or no compaction, and once the mud pit has dried out and covered, the area is smoothed over by a backhoe or grader. Soil removed for the excavation of the mud pit is used to cover the dried out pit. Experience has shown that by the following year the natural sequence of regrowth has begun, with grasses and succulents appearing first. Sage and shadscale appear from undisturbed roots also during this following year.

At mine sites and on roadways which have been subject to compaction, harrowing must be used to break up the surface. This allows the native seeds from the surrounding desert to be blown in and lodge for growth the following season.

Should the natural sequence of regrowth not begin the year following site reclamation, then American Gilsonite will perform a soil test and add necessary amendments as required. At this time also, the site would be reseeded with the mixture indicated in the answer to question #10. This seed mixture will be used everywhere required on the property.

Any growth which stabilizes the land is to be considered successful in this region. Even so called 'noxious weeds' are an important part of the natural sequence of revegetation. These primary plants prepare the soil for the grasses and larger plants to get established. As stated above, the only time reseeding will be considered, is after one year of virtually no growth within a reclaimed site. Also, prior to reseeding, a soil test will be performed.

17) American Gilsonite Company, being a wholy owned subsidiary of the Standard Oil Company of California, is thus self insured by the parent company. A certificate of self insurance has been issued by the State of Utah Insurance Department, #1013, on January 14, 1975.

18) See attachment #18A.

19) The total bond held by the Federal Government is $120,000 in a statewide bond for all current and future activities. It is held by the Bureau of Land Management.

20) The difference between attachments A, B, and C submitted in 1982 and those of 1977, reflect the continued growth and expansion of this company. A new processing facility was built, and additional mines were brought on line as well as the required access roads required to utilize them. One area included in the 1982 inventory that had been missed in 1977 was the river pump station and wells.

21) Attached (#21A) are the MR-3 reports for ACT/047/009 and ACT/047/011 for 1978, 1979, and 1980. No reports were filed for ACT/047/010 as this plan had not been approved. Little Emma lease (ACT/047/011) was not approved by the Federal Government until March 31, 1978, so no report for 1977 was necessary.

Attachment #21B is the letter of response to the State Health Department's letter of October 16, 1980. For further discussion of TDS, see attachment #3A.

22) I can find no record or document which states that the disturbed acreage for the Wagonhound mine plan is limited to 3.0 acres. The Wagonhound area is active and the 3.3 acre figure reflects the access road from the main county road and one mine site. The mine plan as approved by the Federal Government allows a surface disturbance which calculates out to 8 acres over the life of the lease, not including supplemental exploration or off lease road access. Granted, some of this acreage will be reclaimed contemporaneously with mining progress, but this has not been feasible so far, as only one site has been developed and it is still active.

In so far as the status of reclamation work, the 1981 annual update on forms MR-3 supplied to your office on April 1, 1982 contains this information.

I hope this is helpful in answering your questions concerning our operations, and am looking forward to further discussions for approval of a reclamation plan. Thank you for your interest.

Very truly yours,

Richard E. Caldwell for

Richard F. Dewey
Manager of Bonanza Operations

RFD:vjw
Encl.

cc: Bonanza File
Allen Vance, USGS